Bureau of Mining Regulation and Reclamation

WASTE ROCK AND OVERBURDEN EVALUATION

September 14, 1990

Waste rock and overburden shall be evaluated for its potential to release pollutants and its acid generation potential.

SAMPLE COLLECTION

In order for this evaluation to be meaningful, the sample material must be representative of the entire range of material deposited in a waste dump. The following factors must be considered in establishing a representative sampling program.

a. Lithological variation.
b. Mineralogical variation.
c. Extent of "sulfide" mineralization.
d. Color variation.
e. Degree of fracturing.
f. Degree of oxidation.
g. Extent of secondary mineralization.

Drill core samples collected during initial ore body definition may be used for initial material characterization. During active mining, samples can be collected from those materials that have been sent to the assay lab. All or a portion of those materials that have been determined to be waste should be saved and representatively composited during the quarter for on-going evaluations. Samples shall also be collected of those materials that are determined to be waste without having to be assayed.

EVALUATION PROCEDURE

I. Collect a representative sample and submit a synopsis of the sampling procedures used.

II. The potential to release pollutants shall be evaluated by the Meteoric Water Mobility Procedure.

III. The potential for acid generation shall be evaluated in accordance with the following testing procedures:

A. Static Testing - Acid/Base Accounting or equivalent

1. Determine neutralization potential (NP). Add a known amount of HCL, heat sample, and titrate with NaOH to ph7, (convert to tons of $CaCO_3$/1000 tons).

2. Determine acidification potential by Alternative I or II.

Alternative I

a) Determine total sulfur content by LECO furnace. All sulfur is assumed to be acid generating (convert to tons of $CaCO_3$/1000 tons).

Compare results to NP. If NP exceeds this value by 20% evaluations can stop, material is considered non acid generating, if less than 20% continue with Alternative I(b) analysis.

b) Determine total sulfide sulfur content in accordance with procedures described in Standard Methods of Chemical Analyses, or other equivalent procedure. Compare this value to NP. If NP exceed this value by 20% evaluations can stop, material is considered non acid generating, if less than 20% initiate kinetic testing.

Alternative II

a) Determine peroxide oxidizable sulfur. Compare this value to NP. If NP exceeds this value by 100% evaluations may stop, material is considered non acid generating, if less than 100% initiate kinetic testing.

3. For facilities in active operation, if results of static testing shows the material is acid generating, the Division must be notified and kinetic testing initiated within 10 days.

B. Kinetic Testing

Kinetic testing shall be conducted in accordance with one of the procedures identified in Attachment I.

IV. If kinetic testing confirms acid generation potential, site specific conditions and characteristics shall be evaluated and containment/neutralization methods proposed to the Division for approval.